VACUUM RETENTION METHOD AND SUPERCONDUCTING MACHINE WITH VACUUM RETENTION

ABSTRACT OF THE DISCLOSURE

[0030]   A superconducting machine includes a superconductive device and a vacuum enclosure containing and thermally insulating the superconductive device. A cold-trap is configured to condense gases generated within the vacuum enclosure, and a coolant circulation system is adapted to force flow of a cryogen to and from the superconductive device and the cold-trap. A cryogenic cooling system is configured to cool the cryogen in the coolant circulation system upstream of the superconductive device. A vacuum retention method, for a high-temperature superconductive HTS device, includes applying vacuum to the HTS device to thermally insulate the HTS device, condensing gases generated around the HTS device using a cold-trap, flowing a cryogen to and from the HTS device, and flowing the cryogen to and from the cold-trap.